Third Annual Test and Training Symposium Convenes in Orlando

Test and Training Increasingly Being Combined and Brought Closer Together

C O L L I E   J .   J O H N S O N

> *"The number one reason and purpose of government is 'for the national defense'; yet, I find it interesting that in our current budget, defense spending has become what we call 'discretionary' spending, while several other programs have become entitlements. It's sort of upside down, in my view."*
>
> *–James F. O'Bryon*
> *Deputy Director, Operational Test and Evaluation/Live Fire Test*

James F. O'Bryon, Deputy Director, Operational Test and Evaluation/Live Fire Test, who also serves as Chairman, Test and Evaluation Division, National Defense Industrial Association (NDIA), cut to the chase when he opened the 3rd Annual Test and Training Symposium and Exhibition.

"You cannot look at T&E [test and evaluation] in isolation," O'Bryon said. "You have to look at it in the context of *why* we are testing, *why* we are evaluating. The answer is simple. It's because we're trying to equip the troops with the very best."

And equipping the troops with the very best, as all testers, trainers, and evaluators know for a certainty, can not be done in isolation. For that reason, organizers again selected the theme of "Test and Training: A National Partnership," for this year's event.

From left: James F. O'Bryon, Deputy Director, Operational Test and Evaluation/Live Fire Testing; Philip Coyle, Director, Operational Test and Evaluation; George A. Orlicki, U.S. Army Test and Evaluation Command, White Sands Missile Range, N.M.

Over 108 different organizations were represented at the Symposium, held in Orlando, Fla., Aug. 15-17. "We've got a tremendously healthy mix of both what I call the in-house organizations — the Army, the Navy, the Air Force, and the Marine Corps — and also some emergent companies and a lot of software houses represented; also many C3 [command, control, and communications] types of companies and a number of test organizations," O'Bryon said. He also noted that this year's event hosted the largest number of exhibits in the Symposium's history.

O'Bryon asked the participants to focus on six areas as the conference progressed:

• Ways to work together on policy to improve the way the government does business. "Think about changes," O'Bryon urged, "that need to be made to instructions, directives, or other policies — perhaps even legislation —

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that would help the government do a better job."

- Opportunities where the government can get some economies of scale from training or test data collection. "Are there people and equipment or a perceived threat to the systems that we could share?" O'Bryon asked. "Perhaps we could trade people back and forth. In other words, are there assets that we can share mutually?"

- Opportunities to share doctrines and tactics.

- Ways that would bring some commonality and efficiencies to the modeling and simulation business, where billions of dollars are now being spent annually.

- Ways that testers, trainers, and evaluators can share calendars and schedules of events so they all know from which events they may benefit, and plan accordingly.

- Cross-functional training, where those in the test community can go to the training community to learn how they do business and vice versa.

Although O'Bryon kept the conference focused, for the most part, on very broad policies across the entire defense acquisition process, the emphasis became more and more focused on specific issues where test and evaluation and training activities do or should intersect for mutual benefit.

He urged testers, trainers, and evaluators to "cross-pollinate" throughout the three-day symposium. "Make sure that you're learning as much as you possibly can. What you do here is important to the men and women who have to fight our nation's battles, and to freedom-loving people throughout the world."

Congressman John Mica
Florida Republican Congressman John L. Mica, the Symposium keynote speaker, expressed a clear, single-minded point of view when it comes to national defense. "If you don't have national se-

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Taking his cue from the conference theme, "Test and Training: A National Partnership," Mica spoke on "The Imperatives of Strengthening the Test and Training Partnership." He noted that his district, East Central Florida, is home to many military activities, particularly training and simulation activities.

Mica, a former businessman, expressed a keen interest in economy, efficiency, and running a tight fiscal ship. And he believes most of today's Congress is likeminded. "The Congresses of late have been more business people—people interested in bringing commonsense practices to Washington. I'm part of a new generation of people in politics; I believe that's an advantage—bringing business skills and, hopefully, some fresh ideas to Congress."

Any time you're involved in government or business, he said, you look at ways in which you can do a better job more cost-effectively and more efficiently. "But the number one responsibility of our federal government, the number one responsibility most people have lost sight of, is actually to *secure the common defense.*"

Things Are Different Now
Mica noted dramatic change in the nature of the nation's defense mission since he first took office eight years ago. The nation is spending much smaller numbers of dollars, he said, for our most important mission—national security.

"We have a responsibility, not only as members of Congress, but also as stewards of this important national defense responsibility, to see that we ensure the nation's readiness in the most cost-effective manner possible."

Because of increased budget pressures, many programs are now falling by the wayside, Mica noted, and there are very few new initiatives.

Simulation and Live Fire Test and Training

Mica believes that simulation is an increasingly recognized way of doing business more cost effectively. Toward that end, he has helped author, at the national level, a Live Fire Test and Training Program, of which simulation is a natural counterpart.

"We put nearly twenty million dollars into this program, as some of you know," he said. "And I think it's created some great opportunities, not only for the military which I think is extremely important, but also for the private sector." Mica pointed out that often military technology has private sector application.

"I think it's extremely important that government and the military be a partner with the private sector," said Mica. And the Live Fire Test and Training program, he added, was developed with such a partnership in mind.

Another element Mica emphasized as important to the Live Fire Test and Training program was involving the educational and academic community — the nation's think tanks and universities — so the nation reaps the total benefit. The program has been carried out, he said, with some of the nation's finest thinkers and has had tremendous impact in various communities.

Mica stated that 56 percent of the Live Fire Test and Training program funding has ended up in Central Florida in government and industry. "The other 44 percent has gone across the country to many other deserving programs and activities," he added.

Advanced Distributed Learning

In addition to simulation as a means of saving taxpayers' dollars, Mica also has a keen interest in Advanced Distributive Learning, or ADL. Advanced Distributive Learning, he explained, is a very simple program. A technology that was virtually unknown five or six years ago, the active use of the Internet has brought ADL to the forefront of educational media. Quite simply, it incorporates use of technology with learning and distributing the opportunities for learning.

Learning and Military Retention

Today our military is faced with a number of challenges that concern Mica. And one of the major problems he sees with the nation's military is retention — *retaining* people and *training* people. "You learn very quickly, as a novice in government, how important it is to retain qualified people," he said, "and what a tremendous investment we, as custodians of your taxpayer dollars, make in individuals."

Today's military learns more than how to shine shoes and carry a light weapon. Instead, Mica said, they are more likely to be responsible for multi-million dollar machines.

"Today's military requires very advanced skills and technology that we didn't even dream about thirty or forty years ago. And to get those skills and that training, it's important that we have various methods of distributing learning and the capability to use the Internet in concert with Advanced Distributive Learning."

Mica wants to see ADL expanded overseas to remote areas so that all the nation's military forces, including Reserve and National Guard, can learn the highly

Through the magic of virtual reality, DoD Deputy Director of Operational Test and Evaluation/Live Fire Testing, James O'Bryon is able to visualize and analyze a simulated combat scenario through technology developed by Veridian, Inc.
Photo courtesy Veridian, Inc.

complex and technical information that they will need to participate "in this new military that we have today."

Philip Coyle — Partners for the Future

Philip Coyle, DoD's Director of Operational Test and Evaluation, spoke on behalf of the DoD Testing Community. Coyle chose "Partners for the Future" as his topic because he does, in fact, see partnerships developing between the DoD Test and Training communities. And pushing test and training together, he said, are *Joint Vision 2010* and *Joint Vision 2020*.

"The Defense Science Board on training put it this way: 'The best way to improve military capability now is through training.' And we're seeing examples of that all the time in operational tests," said Coyle.

He pointed out four good examples where test and training, out of necessity, are increasingly being combined and brought closer together.

JSTARS

Using the Joint Surveillance Target Attack Radar System (JSTARS) as the first example, Coyle said the ability of soldiers to make the best of and correctly assess digitized information portrayed on a computer screen is very dependent on their training. "Let's say a soldier really needs to get the training of an intelligence officer to pull out of the system all the information that's there. We need much better training systems to help these young soldiers learn how to make the most of this kind of equipment."

Safety

Training is also important in other ways, he noted. The terrible crash of the V-22 Osprey is a case in point, according to Coyle, where the aircraft's true performance was not captured in the training models. "We found out that there were things about that aircraft, which now will need to be in the flight simulator, in the manuals, and in the embedded instrumentation on that aircraft — things that were not there in the past."

Close Combat Tactical Trainer

The Close Combat Tactical Trainer too, said Coyle, is a trainer that allows soldiers to work with all different kinds of equipment on any given day, but keeping the system current with new equipment and software developing all the time presents some real challenges.

Humanitarian Roles

Warfighters, said Coyle, are finding themselves facing all kinds of new roles as peacekeepers and, more recently, firefighters out West. The test and training communities, he said, must be better prepared to equip soldiers with the skills they need for those type situations.

Operational Test Agencies

The Service operational test agencies are also combining test and training, Coyle said. "The Navy, in particular, will not do a dedicated operational test anymore if they can find training situations in which to do operational tests. It doesn't mean they don't do dedicated operational tests; they do. Sometimes that's still the better way."

Coyle said that DOT&E, in their work of assessing systems for operational tests, is finding that training issues are arising more and more frequently. In last year's DOT&E Annual Report, for example, 28 major systems were identified where users indicated a need for training. This was especially true in systems that involved C4I [command, control, communications, computers and intelligence] and digitization.

"Every system has computers in it these days, and training is a very important feature for determining what works and what doesn't in military systems."

New Responsibilities

Coyle spoke of DOT&E's added responsibilities as a result of the reorganization of Test and Evaluation a little over a year ago. The most important piece of that new responsibility, he said, is stewardship for the test ranges and facilities. As a result, his office has looked at the test and training ranges in a new way. Their efforts fall mainly into three categories.

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- Stewardship of the ranges, along with their partners on the training and readiness side, through the Defense Test and Training Steering Group.

- The Live Fire Test and Training program, which is bringing the test and training communities together.

- The Central Test and Evaluation Improvement Program, through which DOT&E is also looking for ways to bring the ranges together by investing in common instrumentation that will work together interchangeably.

Other DOT&E initiatives involving ranges include putting together joint test and training road maps and developing a strategy for sustainable ranges to help those ranges that face encroachment issues.

Together, the trainers and the testers are trying to incorporate the needs of the training community on the test side with the needs of the test community on the training side, Coyle said.

"But for ranges, what we're seeing on the test side is the resources for test going down at the same time that the workload is going up. In general, at all of the test ranges the workload is up, but the overall budget for ranges is going down. So we're trying to work together with our training partners to deal with these issues, and we're having some success in that regard."

Investing for the Future

Coyle identified several test and training initiatives DoD should consider for future investment:

- Instrumentation capability, which will withstand "Super High G" acceleration, for application in missile defense programs.

- Ground test facilities such as simulators, stimulators, hardware-in-the-loop facilities, and trainers that can test equipment and software on the ground as well as in the air.

- Sharing of more models and simulations.

- Embedded test and training.

- Linking test and training ranges electronically as well as functionally.

- Common instrumentation, which has both test and training missions.

Test and Training — Common Ground

Coyle emphasized that there is a tremendous amount of common ground between the test and training communities. "We both want as much realism as we can get ... We're both partnering with

the CINCs [Commanders in Chief] in order to bring the warfighter perspective in earlier and to achieve greater realism."

Both the test and training communities are also committed to getting real military capability early, Coyle said. And both test and training are about learning. "What we see in operational tests (when we grade the training pieces integrally)," said Coyle, "is that it [learning] helps the system develop much more successfully."

Both communities are using the training ranges for testing more and more, Coyle said. "It's a cost-effective thing to do. Training ranges are very valuable assets. This is happening more and more. We see examples all the time with the Navy, Army, and the Air Force as well."
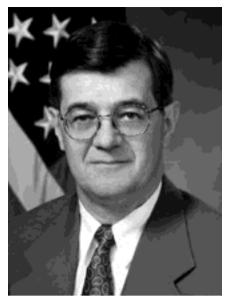
One of the things upon which both the test and training communities should agree, Coyle emphasized, is to encourage program managers and PEOs to invest early in simulators and stimulators, and, in particular, to invest early in simulators, which really do represent how the system will be worked.

Regrettably, he noted, most information systems lag their development of realistic simulators. "They don't load the system the way it would be loaded in battle. They don't permit the same kinds of operator interactions that you would have, and they don't capture a realistic slice of the overall architecture."

Too often, Coyle believes, program managers wait until they're in trouble to turn to simulation, and then it's usually too late. "It's time consuming and expensive to develop these simulators after-the-fact," he added.

Coyle also discussed instrumentation as common ground. "There's going to be a lot more said in this conference about embedded instrumentation. I believe that it's the future ... I think we're going to see instrumentation more and more on military platforms."

Instrumentation, he said, is used during test, development, and training. Later, it is used to diagnose system failure. And

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still later, it supports sustainment and the equipment throughout its life cycle.

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About the Live Fire Test and Training Program

Coyle praised Mica and O'Bryon's work on, and support of, the Live Fire Test and Training program. "I think it's been a wonderfully successful program thanks to Jim [O'Bryon] and [Congressman] Mica, who literally bootstrapped its existence from nothing. The budget has gone up a little bit every year. It's still a relatively small program, certainly by DoD standards. But the [exhibits] are full of examples of success stories — things that are beginning to have a life of their own and which would not have happened if it hadn't been for this fine initiative."

Nature of Test and Training Changing

Coyle spoke of how the nature of test and evaluation is changing, along with the nature of training. There are new goals being set for new technology in computers and digitization; lasers, high-power microwaves, and other direct energy systems; multi-spectral sensors and detectors on all kinds of platforms; smarter weapons; and modeling and simulation space systems. A tremendous range of new technologies is emerging, which Coyle said is impacting what we [DoD] do in test and evaluation and in training.

And in some situations, Coyle added, the users are training the testers and evaluators. "More and more we often find when we go into a military setting, that the equipment is being used in a way that the designer never contemplated, or never even imagined."

Coyle said DOT&E is also seeing more and more evolutionary acquisition, or so-called spiral development — an area he emphasized was very important to do right, both from the training and the test point of view.

Quoting Dr. Jacques S. Gansler, Under Secretary of Defense (Acquisition, Technology and Logistics), Coyle said that Gansler's words, although directed to the test and evaluation community, apply equally to the training community.

"We'll begin to think of test as an integral part of the procurement process ... We realize that if we can begin operational user test much earlier, we can drastically shorten our weapon cycle times. Also, because of the rapid evolution of modern technology, we must be prepared for frequent and continuous updates for our existing systems. Finally, we must consider the fact that many of our systems will contain commercial elements. Each of these changes is a critical challenge to the test and evaluation community."

New DoD 5000 Series

Part of the new DoD 5000 series deals with making it possible to bring technology from the laboratory to the warfighter much more rapidly. This, Coyle said, is going to have a big impact on how DoD does test as well as training, and when it will be done.

Ending where he began, Coyle said, "Test and training, while they have lots of challenges, are partners for the future. We're doing tests on training ranges and training on test ranges virtually every day; we are, at least in OSD, rediscovering each other and the strengths that our partnerships can bring."

MILITARY RESEARCH FELLOWS UPDATE

2000-01 Report to Focus on Outsourcing

The 2000-01 Defense Acquisition University, Defense Systems Management College (DAU-DSMC) Military Research Fellows came on board in August 2000. This group of three military 0-5s will remain at DAU-DSMC, Fort Belvoir, Va., until June 2001.

During their tenure, they will seek answers to the topic of the effectiveness of DoD's implementation of outsourcing. The purpose of their study is to provide a strategic approach to assessing the effectiveness of outsourcing throughout DoD. This Fellows report is scheduled to be released during the Summer of 2001.

(To view previous Military Research Fellows reports, visit **www.dau.mil/news/whatsnew.htm** on the Internet.)

MESSAGE FROM SENATOR CONNIE MACK ON LIVE FIRE TEST AND TRAINING PROGRAM

"As a member of the United States Senate, I have the opportunity to review many worthy defense programs, all competing for funding. One worthy program under review and germane to this conference is the Live Fire Test and Training Program. This program, currently funded by Congress in FY2001 for $7.5 million, combines efforts in the live fire test community with those of the training community in raising readiness to unprecedented levels. It uses impressive modeling and simulation technologies, examines casualty treatment issues, battle damage assessment repair, firefighting improvements, and many other solutions to problems such as gravitational loss of consciousness.

This outstanding program is conducted from military training commands in Orlando under the capable leadership of Jim O'Bryon of the Pentagon's office of Live Fire Test and Evaluation. As Jim will attest, I continue to encourage the Department of Defense to support this outstanding program.

I think this work is so important that I believe the Department of Defense should permanently incorporate the program into its budget to provide continuity and stability. But I'm pleased that Congress has once again funded the Live Fire Test and Training program for fiscal 2001. This is a highly successful program, building and enhancing new test relationships and partnerships between modeling and simulation companies, academia, and the federal government today and beyond."

—Connie Mack

(In a show of bipartisan support, Democratic Congresswoman Tillie K. Fowler and Democratic Senator Bob Graham, both representing Florida, also support continued funding for the Live Fire Test and Training program.)